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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,973	04/21/2004	Gabriel Iftime	A1682Q1-US-DIV	5410

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EXAMINER

SADULA, JENNIFER R

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 11/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/828,973

Applicant(s)

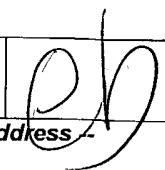
IFTIME ET AL.

Examiner

Jennifer R. Sadula

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-17 is/are rejected.
- 7) ☒ Claim(s) 9 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/6/04; 4/21/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The IDS submitted 7/6/04 and 4/21/04 have been considered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 6 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not exemplify or teach in any other manner how S4 can be a liquid crystal moiety. The only teachings are for alkyl radicals.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8 and 9-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Hanelt et al., U.S. Patent No. 6,300,454 ("Hanelt").

Applicants claim a composition comprised of a liquid crystal and a compound having formula 4. Hanelt teaches liquid crystalline nematic organosiloxanes wherein the mesogenic sidegroup is of the formula $R^2-X^1-(A^1-X^2)_a-R^3-A^2$ and is attached to the backbone $R^1_pSiO_{q/2}$ which anticipated Applicants' Z4 wherein the "p" and "q" of Hanelt are the degree of polymerization (specified by Applicants as e") (column 2). This compound can be read left to right to anticipate Applicant's claimed invention wherein R^2 anticipates (S4); X^1 anticipates A4; C4 is anticipated by the A^1 (when $a=1$ or is multiple rings when $a>1$, X^2 is a bond, as is R^3) and A^2 anticipated D4. More specifically, with regard to Applicants' claims 2 and 11, D4 is anticipated when A^2 is Cl or any other halogen (3:12-19). With regard to Applicants' claims 3 and 12 C4 is anticipated by being at least one aromatic ring. With regard to Applicants' claims 4 and 13 A4 is anticipated by the carboxyl group. With regard to Applicants' claims 5 and 14 S4 is anticipated as being a straight chain alkyl. With regard to Applicants' claims 6 and 15 the material is a liquid crystal moiety. With regard to Applicants' claims 7 and 16 Z4 is anticipated as a vinyl group is a "C1-C10 hydrocarbon radical" (as the term "hydrocarbon" includes C=C groups) and is further anticipated when the formula is formula 9 of Hanelt (column 5) wherein R8 is an acryl or methacryl group further comprising a straight chain alkyl group to anticipate S4. With regard to Applicants' claims 8 and 17 the alkyl chain is anticipated as well as the substituted alkyl chain.

Claims 1-6 and 9-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Hall et al., U.S. Patent No. 6,511,612 ("Hall").

Hall teaches LCP materials of the formula shown in the abstract wherein formula I represents Z4 and of the pendant moiety, $Y-(CH_2)_n$ anticipates S4, Q anticipates A4 when $q=0$ and Z is a bond and the mesogenic group anticipates C4-D4 wherein D4 is Cl and C4 is the dual ring unit. More specifically, with regard to Applicants' claims 2 and 11, D4 is anticipated when Z of the mesogenic group is Cl (10:11-17). With regard to Applicants' claims 3 and 12 C4 is anticipated by being at least one aromatic ring as C4 is anticipated by A-W₁-D wherein A and D are both rings. With regard to Applicants' claims 4 and 13 A4 is anticipated by the carboxyl group. With regard to Applicants' claims 5 and 14 S4 is anticipated as being a straight chain alkyl as Y can be CH₂. With regard to Applicants' claims 6 and 15 the material is a liquid crystal moiety.

Claims 1-8 and 9-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Wu et al., U.S. Patent No. 6,312,618 ("Wu").

Wu teaches polar diphenyldiacetylene liquid crystals and compositions comprising them (such as eutectic mixtures comprising such) (abstract) wherein the asymmetric polar LC materials are shown in the formula of the abstract. This compound, which may be a side chain liquid crystal moiety, as R1 can be a polymerizable alkenyl group backbone chain (4:22-30) can be read right to left to anticipate Applicant's claimed invention when $b''=2$ wherein R1 plus the ring anticipates (S4)₂; $-C=C-C=C-$ anticipates A4; C4 is anticipated by the Y-substituted ring and X anticipated D4. More specifically, with regard to Applicants' claims 2 and 11, D4 is

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anticipated when X is Cl. With regard to Applicants' claims 3 and 12 C4 is anticipated by being at least one aromatic ring. With regard to Applicants' claims 4 and 13 A4 is anticipated by the alkene group shown (Examiner notes that the carbons are drawn with 5 valiancy- but it is clear this is a misprint as the carbons must each be double-bonds). With regard to Applicants' claims 5 and 14 S4 is anticipated as being a straight chain alkyl, and as a cycloalkyl. With regard to Applicants' claims 6 and 15 the material is a liquid crystal moiety. With regard to Applicants' claims 7 and 16 Z4 is anticipated as a vinyl group as detailed above. With regard to Applicants' claims 8 and 17 the alkyl chain is anticipated as well as the substituted alkyl chain, again as detailed above.

Claims 1-8 and 9-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Parri et al., U.S. Patent No. 5,720,900 ("Parri").

Parri teaches side-chain liquid crystalline copolymers of formula A wherein Pm anticipates Applicants' Z4; m anticipates Applicants' e"; A1 anticipates Applicants' S4; Z1 anticipates Applicants' A4; Ring A anticipates Applicants' C4 and R2 anticipates Applicants' D4. More specifically, with regard to Applicants' claims 2 and 11, D4 is anticipated when R2 is substituted with a halogen atom. With regard to Applicants' claims 3 and 12 C4 is anticipated by being at least one aromatic ring. With regard to Applicants' claims 4 and 13 A4 is anticipated by a carboxyl group or carbonyl group. With regard to Applicants' claims 5 and 14 S4 is anticipated as being a straight chain alkyl, and as a cycloalkyl. With regard to Applicants' claims 6 and 15 the material is a liquid crystal moiety. With regard to Applicants' claims 7 and 16 Z4 is anticipated as a Pm backbone as detailed above. With regard to Applicants' claims 8

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and 17 the alkyl chain is anticipated as well as the substituted alkyl chain, again as detailed above.

Allowable Subject Matter

Claims 9 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Andou teaches yet another compound of the present invention.

Poetsch et al., U.S. Patent No. 6,326,066 teaches disubstituted difluorobenzene compounds and a liquid crystalline medium wherein the disubstituted difluorobenzene compounds are shown in formula I (abstract).

The Mehl references teach side-chain polymers anticipating the claimed invention but have not been applied to avoid redundancy.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer R. Sadula whose telephone number is 571.272.1391. The examiner can normally be reached on Monday through Friday, 10am-6pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F. Huff can be reached on 571.272.1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JRS

4 October 2004



MARK F. HUFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700